In the dearth of cyclones in upper and middle latitudes east of longitude 170° W., very few gales occurred there except during the last few days of the month, and most of those of the 27th to 30th did not exceed 9 in force.

West of the 170th meridian, on the contrary, the period of greatest quiet was that of the 3d decade, while the periods of greatest activity were those of the 1st to the 4th and the 10th to the 15th. On the 3d and 4th gales of varying force up to 11 swept considerable areas along the steamship routes between Japan and 175° W., and on the 11th forces of 10 to 11, with an accompaniment of violent rains qualls, were experienced by vessels between 40° and 45° N., 150° and 160° E.

On the 1st and 2d a severe storm of probable tropical origin was encountered by the British steamer *Anomia*, San Pedro to Yokohama, while near 35° N., 157° E. The gales began from south-southeast at about 9 p. m. of the 1st, pressure 29.21. At 2 a. m. of the 2d the pressure had dropped to its lowest reading, 28.65, and the wind had attained hurricane force from south-southwest. The *Anomia* had been compelled to heave to an hour earlier, and so remained until noon, when the wind had decreased to west-northwest, 5.

A report by the Rev. José Coronas, chief of the Meteorological division of the Philippine Weather Bureau, upon other September typhoons appears elsewhere in this issue of the REVIEW.

Two apparently moderate disturbances of cyclonic character appeared off the coast of Mexico. The first caused fresh to strong gales at sea near Acapulco on the 14th, and south of Manzanillo on the 16th. A west-southwest gale, force 9, was also reported on the 16th by the American steamer *Steel Navigator* while near 16° N., 109½° W., lowest observed pressure 29.64 inches.

A second series of gales swept the coast between Manzanillo and Mazatlan on the 24th and 25th. The depression causing them seems to have moved northward, since on the 26th gales occurred off the lower part of the Peninsula of California. The highest wind force noted was 10 from southeast, by the British steamer *Benalder*, near 21° N., 108¾° W. The lowest observed pressure was 29.56, read on board the British steamer *Toco* on the 26th, in 24° 40′ N., 112° 43′ W. Heavy rains fell during the course of these disturbances.

At Honolulu the total rainfall was 0.70 inch, or 0.58 less than the normal. The prevailing wind continued from the east. The average hourly wind velocity was 8.8 miles, and the maximum velocity was 26 miles from the east on the 24th. Temperatures were close to normal.

Fog decreased greatly in middle and northern latitudes since August, but was observed on scattered dates all along the upper steamship routes, being met with most frequently, on four to six days in the month, over small areas off the central California coast, to the southeast of Dutch Harbor and east of northern Japan.

TYPHOONS AND DEPRESSIONS

FIVE TYPHOONS OVER THE FAR EAST IN SEPTEMBER, 1926

By REV. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

Aside from two other distant Pacific depressions or typhoons whose tracks are not so definite, we had five well-developed typhoons over the Far East during the last month of September—two over Japan, two over the Babuyan Islands in the Philippines, and one over the China Sea and Indochina.

Two Japan typhoons.—The first of these seems to have developed on September 1 and 2 over the Pacific between the Loochoo and the Bonin Islands. At 6 a. m. of September 3 the center was shown by our weather maps to be east of Oshima in about 133° 15′ longitude E., and 28° 40′ latitude N. moving northward. On the 4th the typhoon traversed Japan, moving northeastward, the position of the center being at 6 a. m. of the 4th and 5th:

September 4, 6 a. m., 134° 30′ longitude E., 34° 15′ latitude N.

September 5, 6 a. m., 148° longitude E., 45° latitude N.

The second Japan typhoon was probably formed on the 11th to 12th about 250 miles east of northern Luzon. It moved Northwest on the 13th, but recurved to north and northeast on the 14th near to the east of Bashi Channel. On the 15th and 16th the typhoon traversed the Loocho Islands moving northeastward, and on the 17th it traversed Japan, keeping the same direction.

The position of the center at 6 a. m. of the 14th to 18th was as follows:

September 14, 6 a. m., 123° 20′ longitude E., 21° 05′ latitude N.

September 15, 6 a. m., 123° 30′ longitude E., 23° 10′ latitude N.

September 16, 6. a. m., 125° 50′ longitude E., 25° latitude N.

September 17, 6 a. m., 132° 15′ longitude E., 30° 40′, latitude N.

September 18, 6 a. m., 139° longitude E., 38° latitude N.

Two Philippine typhoons over the Babuyan Islands.—The first of these typhoons appeared in our weather maps on the 6th near 130° longitude E., between 13° and 14° latitude N. It moved west-northwest on the 6th, northwest on the 7th and north-northwest in the morning of the 8th; it inclined again to west-northwest at noon of the 8th and traversed the Babuyan Islands in the afternoon of the same day; finally, it inclined to north-northwest and north by west on the 9th, traversing the southern part of Formosa Channel on the 10th, and entering China near Amoy during the night of the 10th to 11th.

The steamers *Mayebashi Maru* and *Ethan Allen* were involved in this typhoon, the former near Balintang Channel, with a barometric minimum 746.49 millimeters (29.39 inches) at 4 p. m. of the 9th, and winds from south by west, force 7, and the latter near the southwestern coast of Formosa with the same barometric minimum at 2 a. m. of the 10th, and winds from southeast, force 6.

The position of the center at 6 a. m. of the 8th, 9th, and 10th was as follows:

September 8, 6 a. m., 123° 50′ longitude E., 17° 30′ latitude N.

September 9, 6 a. m., 119° 30′ longitude E., 20° 30′ latitude N.

September 10, 6 a. m., 118° 35′ longitude E., 21° 45′ latitude E.

The second Philippine typhoon was shown by our weather maps at 6 a. m. of the 25th, east of Luzon in about 128° longitude E., between 15° and 16° latitude N. It moved rapidly northwest by west and west-northwest on the 25th and 26th, the center traversing the Babuyan Islands in the morning of the 26th not far from the northern coast of Luzon and passing to the south of Hongkong in the morning of the 27th.[1] The

[1] According to press reports, the typhoon that entered south China on the 27th caused the loss of 2,000 lives and 130 fishing junks in the waters around the Portuguese colony of Macao.—*W. E. H.*

rate of progress of the typhoon from 6 a. m. of the 26th to 6 a. m. of the 27th was 21 miles per hour.

According to the reports published in Manila papers "hundreds of people were rendered homeless and foodless in the islands of Camiguin and Cagayan of the Babuyanes group where strong typhoons passed there recently. All houses except the municipal building in Calayan and all crops were destroyed."

The position of the center at 6 a. m. of the 25th, 26th, and 27th was:

September 25, 6 a. m., 128° 00′ longitude E., 15° 30′ latitude N.

September 26, 6 a. m., 122° 50′ longitude E., 18° 35′ latitude N.

September 27, 6 a. m., 114° 40′ longitude E., 20° 35′ latitude N.

China Sea and Indo-China typhoon.—This typhoon was formed on the 28th over the China Sea about 100 miles west of Luzon. It moved westward, traversing the Paracels on the 29th and reaching the coast of Indochina to the north of Tourane in the early morning of October 1.

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DETAILS OF THE WEATHER IN THE UNITED STATES

GENERAL CONDITIONS

The outstanding features of the month were the severe tropical storm which struck the southeast Florida coast on the early morning of the 18th; the great extremes of temperature—abnormally cold in the Northwest and coincidently therewith abnormally warm in the South and East—and finally the flood-producing rains in Missouri and adjoining States.—*A. J. H.*

CYCLONES AND ANTICYCLONES

By W. P. DAY

Seventeen low-pressure areas were plotted during September, the majority of which were developments over the Plateau and Rocky Mountain regions and moved northeast or east-northeast into Canada. An unusual number of tropical disturbances developed during the month. On the 13th there were four of these west of longitude 50° W.; one, east of the Leeward Islands, which later passed over Miami; a second, east of Bermuda near longitude 53° W.; a third, about 300 miles southwest of Bermuda; and a fourth of slight intensity south of Cuba. The third storm noted had an unusual history. It was first suspected northeast of the Leeward Islands on the 7th, recurved about 250 miles off the middle Atlantic coast on the 16th and turned northeast, only to be forced to make a loop by an intrusion of high pressure in its path between the 18th and 20th, and finally passed over extreme eastern Newfoundland on the 23d with diminished intensity and reached southern Greenland on the 24th. On the 28th a small hurricane passed inland at Vera Cruz, Mexico; another of great intensity was central over the Azores, and there were indications of a disturbance south of Bermuda. This last depression, however, did not develop and had disappeared by the end of the month.

Only eight high-pressure areas were plotted, but practically all of these were cold-air masses from the Canadian interior. The great HIGH of the 23d–28th brought in the first cold wave of the season to the Rocky Mountain region and the Northwestern States.

FREE-AIR SUMMARY

By L. T. SAMUELS

A comparison of Table 1 and Chart III reveals a strikingly close agreement, the negative temperature departures of the North standing in marked contrast to the positive values of the South. This similarity between the surface and free-air departures is now to be expected in view of the increasing period of observations at the aerological stations. The free-air relative humidity departures were practically all positive, as were those of vapor pressure.

The most pronounced departures in the resultant winds occurred at Broken Arrow and Ellendale, where, as indicated in Table 2, an excess of southerly winds prevailed. It is of particular interest in this connection to note the deficiency in the monthly mean free-air temperatures for Ellendale despite the preponderance of southerly winds at that station. The explanation of this apparently lies in the fact that most of the days on which kite flights were made in southerly winds, the latter were associated with the rear sectors of areas of high pressure. That the temperatures under such conditions are relatively low is further indicated by the fact that in every such instance during the month the temperatures were *below* the monthly mean, whereas in every record obtained in southerly winds associated with the front sector of a low-pressure area the free-air temperatures were *above* the monthly mean. This relationship between the temperatures in HIGHS and LOWS is still further illustrated by the kite records of Ellendale for the 20th and 21st, the tabulated data of which appear below:

Altitude m. s. l. (meters)	20th, 7.12 to 9.15 a. m.		21st, 9.54 to 11 a. m.	
	Temperature °C	Wind direction	Temperature °C	Wind direction
444 (surface)	4.7	SSE	16.1	NNW.
500	5.7	SSE	15.7	NNW.
750	10.3	SSE	13.7	N.
1,000	9.8	SSE	13.7	N.
1,250	9.1	SSE	12.9	NNW.
1,500	8.3	SSE	12.4	NW.
2,000	6.9	SSE	10.9	NW.
2,500	8.1	SSE	7.1	W.
3,000	4.6	S	3.2	W.
3,500	1.1	SSW	−0.9	W.
4,000	−2.5	SSW	−5.2	W.

The data for the 20th represents conditions in the rear sector of a HIGH and shows southerly winds prevailing from the ground to 4 kilometers, while the record for the 21st was obtained in the rear sector of a LOW, and in accordance with the pressure gradient under these conditions the winds from the ground to 2 kilometers were mostly northerly. In both cases the velocities were large. It will be seen, however, that with the northerly winds associated with the LOW the temperatures up to 2 kilometers were appreciably *higher* than on the preceding day, when southerly winds prevailed from the rear sector of a HIGH. At 2 kilometers on the 21st where the north component disappeared and the winds became westerly the temperatures became increasingly lower than at the corresponding levels on the 20th. This increase in the lapse rates in the higher levels of LOWS as compared to